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Instant Replay as a Tool for Correcting Human Error in College

Basketball: A Historical Analysis

Matthew P. Hammond

Department of Sport Studies

Honors Research Project

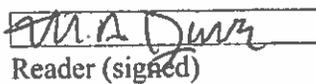
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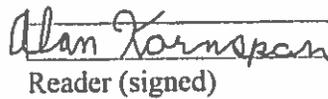
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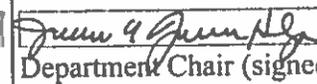
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**Instant Replay as a Tool for Correcting Human Error in College Basketball: A Historical
Analysis**

Matthew P. Hammond

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Abstract

Sport has grown into one of the largest and most profitable businesses in the United States. With gambling now coming onto the scene more than ever before on top of player salaries in professional leagues and collegiate head coaches' salaries sky-rocketing, there is more pressure than ever being put on officials to get things right and ensure the integrity of games. A tool utilized in most major competition at the professional and collegiate level is instant replay. Instant replay is something officials can use to analyze a previous ruling to determine if the right call was made or if something needs to be changed. Many fans of sport are aware of replay, but few know of the about some of its intricacies of its historical development. Thus, the purpose of this investigation was to highlight major developments of instant replay in collegiate basketball: 1) where did instant replay come from and why is it important?, 2) how is instant replay administered in games and what is the process?, and 3) how can technology in sport such as instant replay limit human error?

Instant Replay as a Tool for Correcting Human Error in College Basketball: A Historical Analysis

A simple internet search of “instant replay in sports” will net you thousands of articles and columns written with the purpose of critiquing or complaining about the use of instant replay in close game situations. However, little information on the operational side of instant replay exists regarding how it is administered and the effect it has on the games and officials. It can be argued that the importance of instant replay and the accuracy of officials can be directly linked to the explosion of spending on collegiate athletics by fans and athletic departments themselves. For instance, the college basketball industry is estimated to be worth \$11 Billion (McKenna, 2016). In addition, between 2005 and 2011, coaches’ salaries grew by an estimated 102% (McKenna, 2015). This can be attributed to factors including merchandise sales, ticket sales, donations, and most importantly, media rights.

On top of the added scrutiny that comes from what schools and conferences spend on basketball, the gambling industry has recently become another reason for more scrutinized officiating operations. The Supreme Court’s decision in *Murphy v. NCAA* now allows the individual states and other governing bodies to authorize sports gambling (Katz, 2019). Considering that each year Americans spend around \$150 Billion on illegal wagers for both professional and amateur athletic events (Liptak & Draper, 2018), the potential for increased revenue for leagues partnering with gambling companies has never been higher. In March of 2019, it was estimated that Americans would wager \$8.5 Billion alone on the 2019 NCAA Tournament (Russ, 2019).

With the growth of potential gambling revenue now being legal, the microscope is on the NCAA and its officials to be as close to perfect as they possibly can in deciding games correctly.

Therefore, since 2005, the NCAA, in collaborations with DVSport, has experimented and implemented instant replay procedures in many of its football conferences and divisions (Hawkins, 2015). DVSport, based in Pittsburgh, Pennsylvania, produces software, provides technical support, and supplies equipment for instant replay operations at many different levels of competition across different sports. Particularly within this NCAA football system, there is an official whose only job is to take at least a second look at every single play in a game to ensure that the game is administered properly. About five years after the implementation of football replay, DVSport developed a similar basketball system that was used for the NCAA tournament for the first time ever in 2015 (Hawkins, 2015). The system gave officials the ability to take control of some of the replays away from the television producers so that they can expedite review completion.

Given that it has been less than five years since the NCAA standardized replay for its biggest basketball event, the NCAA tournament, there are still many unknowns that come with instant replay in college basketball. It is safe to say that most, if not all, fans of the sport are aware of what instant replay is. However, the number of people who understand the intricacies of how it works is limited to those closely involved with games and perhaps a very small group of fans in the general public. Technology's impact on society has made it so human error is being minimized in many places. That is also true for sports like college basketball. For instance, every college basketball scorer's table now has a Precision Time (Shallotte, North Carolina) system. Precision Time is a system developed by former referee Mike Costabile that uses the sound of the referee's whistle to stop a running clock. The officials also wear a belt pack with a button that is used to start the clock when the ball is put into play. According to Precision Time's website, human clock operators' reaction times are somewhere between 0.5 and 0.7 seconds,

which can add up quickly in a game with a lot of whistles and stoppages (precisiontime.com).

The system became standard for NCAA tournament games beginning in 2015 (Worlock, 2015).

The system is not designed to completely remove human error from the game, but it removes one of the avenues of human reaction time that can throw off the timing of the game (Beard, 2019).

We have already seen more centralized and standardized replay operations in professional as well as in some higher-level collegiate leagues. Thus, a historical analysis can help provide more information to the public on the intricacies and the development of instant replay in collegiate basketball. In turn, that more informed public can begin to ask the right questions to sport administrators in order to make instant replay as effective as possible.

Purpose of Study

The nature of this historical analysis includes a compilation of information not readily available, as instant replay is still a relatively new concept in most sports. Considering the quick technological advancements of instant replay in the past decades, the researcher deems it necessary that consumers of collegiate basketball be provided with information on how instant replay operations are administered. Although the purpose of this study is exploratory in nature, there are still important research questions that have guided the present study including:

1. Where did instant replay in college basketball come from and why is it important?
2. How is the entire instant replay operation administered during games?
3. How is technology like instant replay minimizing human error that affects collegiate basketball games?

Background

The first step in a more informed public on the topic of instant replay in college basketball is to explain how the DVSPORT system itself works. Every game played with a DVSPORT replay system has an assigned support technician who works for DVSPORT. The support tech is able to remotely log into the system to perform updates as well as fix problems. The system includes the computer as well as three monitors, a keyboard, a mouse, a shuttle (remote officials use), X-Keys (used by the technician to complete different actions without using a keyboard), clock input, and an internet connection. Video feeds, typically from the television production, are fed into the system via SDI (serial digital interface) cable. There can be up to six different video feeds fed into the system, typically including all or most camera angles. Once the DVSPORT Basketball Replay software is launched and game information such as teams participating, names of officials, TV production, game time, etc. is put in, the main interface of the software is shown, which includes thumbnails of all video feeds. Using the X-Keys, the replay technician controls how the video is recorded and marked. Whenever there is a violation (such as out of bounds, three-seconds, or a shot clock violation), the technician must manually input the team the violation is called on, the official who called it, and the type of violation. This is completed by clicking on the correct prompts. In some cases, such as when a player is called for a technical foul, the replay technician is required to type the particular information regarding who was included and why they were included into the notes section. When a personal foul is called, the technician must do the same as he or she does for a violation, however in addition to the team, official, and type of foul, the player's number must be included.

When the officials go to the monitor to review a play, there is constant communication between them and the replay technician. When a review is officially initiated by the technician

by clicking on “Start Review,” the conference as well as DVSPORT personnel are notified. The official(s) come to the technician and state what they are looking at. The official(s) then look at each angle or rely on the technician to provide the best angle he or she sees. The officials also have the option to ask the technician to zoom in on anything in particular. The shuttle remote that the officials have is able to control the frame-by-frame speed of the video as well as switch between camera angles. They also have the option to see up to four angles on the monitor at the same time. Throughout the process of reviewing a play, the officials have the option of communicating with TV production so that the best angles and zoom can be provided to make sure the correct call is made. As for the clock input, it is up to the replay technician to make sure the clock is synchronized with the video before the game. If it is not, the officials would not be able to review plays in which time left on the clock is an issue unless there is a game clock in the frame of the video. After the officials make their decision to reverse the call or let the call stand, they inform the technician so the technician can properly document what happened during that particular review. The entire game is reviewed by the conference, plays involving reviews are scrutinized the most.

After the game is over, the score must be input and then a report on the game is developed. The technician is required to document any issues with hardware, software, communication with television production and officials, video feed, the post-game process, the number of officials’ devices that the game file is going to be loaded onto, and the number of reviews as well as a description of the reviews in the report. After this information is input, the technician can load the game onto the officials’ devices. Officials have the option to have the technician load the game file onto their iPad at the scorer’s table so they can immediately watch

the game through the DVSPORT 360 app. The officials also have the option of downloading the game from the DVSPORT 360 via internet themselves.

The entire process of using this DVSPORT replay system for college basketball games was developed using the help and input of the officials themselves. Before the system became standard, officials would have to rely on a television producer pulling up the necessary angles in order to see what they need to see. There are problems that come with this. One of the most common complaints, which still is relevant today, is that it interrupts the flow of the game with long stoppages. Speaking to a television producer via headset that is either in a studio or in the production truck outside of the arena can create a delay. The producer, if they even understand the game of basketball well, may not be aware that there was something the officials wanted to stop to analyze. Thus, the officials may want to see a play that occurred two minutes prior, and the production crew will then need to take the time to go back and find the play and then provide the other necessary angles. The official was also tasked with describing to the producer how he or she wanted the video to be slowed down, stopped, zoomed, etc. With the DVSPORT system, communication with the television production is still necessary. The zoom that the television producer can provide will likely be better than zooming in on the original video that was cut up by the system. Also, not every angle is always available to be fed directly into the system, so the producer may be asked to send that angle to the system. The greatest advantage to the DVSPORT system is the officials have more control during reviews than the television production had. This is how the process has become so much more streamlined and referee-friendly. They have control at what they are looking, and can make rulings as efficiently as possible as long as the replay technician is following all necessary procedures as well.

Literature Review

In scholarly literature, the topic of instant replay, specifically in college basketball, is currently non-existent. For this reason the purpose of this study is very broad. One of instant replay's purposes in sport is to correct human error, so it is important to describe what human error is and the different approaches to correcting it. The *Western Journal of Medicine* released an article by James Reason (2000) examining two different ways to approach human error regarding mishaps in clinical practice, titled "Human error: models and management." These ideas can just as easily be applied to officials in a basketball game, who work together to administer a game with as little error as possible.

The first of the two approaches described regarding human fallibility is the person approach. The person approach is defined as a "focus on unsafe acts—errors and procedural violations—of people on the front line" (Reason, 2000, para. 2). In the case of this article, individuals on the front line are surgeons, physicians, nurses, etc. In a college basketball game, the people on the "front line" are the officials themselves as well as any other game administrators, such as the people working at the scorer's table. The person approach looks at errors in these positions as "arising primarily from aberrant mental processes such as forgetfulness, inattention, poor motivation, carelessness, negligence, and recklessness" (Reason, 2000, para 2). Remedies, or countermeasures, to reduce errors that arise under the person approach are things such as disciplinary measures, retraining, and blaming among other things. Depending on the severity of an error committed by one of the people on the front line of a college basketball game, these measures are not necessarily out of the ordinary.

J.D. Collins, coordinator of NCAA men's basketball officiating, understands that sometimes disciplinary actions, such as suspensions, are necessary in order to get an official to

change his or her ways for the better (Referee, 2019). He calls officials “creatures of habit... We’re stubborn...we won’t change until we’re forced to change in some way or another” (Referee, 2019, para. 15). With that said, Collins noted that there are numerous factors that determine the severity and nature of a suspension, because there are so many possibilities of things that can go wrong in so many different situations. He lists three factors. The first of these factors is simply “price and pressure.” Men’s college basketball officials can make anywhere around \$1,000 to \$2,000 per game, with some officials working between 50-100 games each season (Buleen), though some sources suggest some officials make even more. The higher the price, the higher the pressure. Considering what they are getting paid, disciplinary measures such as suspensions inevitably come up as a solution to some mistakes. The second factor Collins discussed is the contract of an official. If suspensions are written into any kind of contract the official signs, they must not be surprised to receive a suspension if disciplinary measures must be taken. Thirdly, Collins factors in the egregiousness of the error the official makes. The example he gives of the microscope closing in on an official would be if he or she were out of position and missed a game-changing call because of it in the last five seconds of a conference championship game. Collins is slow to simply say that officials who make mistakes must be suspended, but he realizes that some sort of accountability measure must be kept.

The National Association of Sports Officials (NASO) issued a statement recently stating that officials welcome accountability and that egregious errors should result in heightened publicity for those particular errors and how they happened (Referee, 2019). However, the statement also stated, “what disturbs us is that errors of judgement made during a contest, whether in fact or fiction, result in the suspension of officials. That trend deserves special attention” (Referee, 2019, para. 22). Officials in many sports, not only college basketball, are

largely independent contractors who are assigned to work games by an assigner. This is a system that rewards good officiating and punishes those who are not proficient. An assigner can simply remove an official from a bigger assignment or assignments in general if the official has been deemed incompetent. It is not technically a suspension, but it can be argued that a shift in assignment types is equal to a suspension. In the 2019 NCAA tournament, Collins claimed he sent multiple officials “home” due to the nature of errors made as well as the stage they were committed on (Referee, 2019). His rationale is “the team went home, you go home.” His philosophy backs up the idea of assigners rewarding and punishing officials through the games they are assigned. He claims “if your missed-call ratio is too low, other people will obviously rise above you and they will advance” (Referee, 2019, para. 43).

The second approach described in the article on human fallibility is the system approach. The system approach is characterized by the idea of humans being naturally susceptible to making errors, even when conditions are most in their favor (Reason, 2000). Under this approach, human error is viewed from an organizational standpoint. The focus on whatever error was committed is not on any single person, but how the system allowed such errors to happen. Countermeasures or remedies under the system approach focus on the fact that “we cannot change the human condition, we can change the conditions under which humans work” (Reason, 2000, para. 5). Therefore, a system approach to human error is one that contains systematic defenses against error. When errors occur, the focus is not to be put on the individual who commits the error, but it should lead to an evaluation of the system of defenses itself to determine how it can be adapted to avoid such instances from happening again in the future.

The group of people who administer a college basketball game are an example of the system approach at work. There are three officials on the floor, the official scorer, clock

operator, scoreboard operator, shot clock operator, and replay technician. The statistics crew can prevent errors as well, though their role is significantly less impactful in most situations. The body of seven people, in most situations, are all important when it comes to identifying mistakes or errors. The scorer's table meets with the officials before every game to make sure everyone is on the same page. The message communicated in that meeting could largely be the same for every game, but the importance of knowing that it is a team (or system) free of egos that has a common goal of the game being administered properly is paramount.

The scorer's table and officials are a system of defenses themselves, with replay as a final defense against egregious errors. The article discusses defenses against error as a few different "layers." Although each defense layer would be perfect in an ideal world, there will inevitably be mistakes. This is why the layers of the system can be compared to swiss cheese (Reason, 2000). Each defense mechanism in a system, whether it is good or not, has holes that mistakes can slip through. Very rarely do all of those holes line up to allow any egregious errors. However, it can and does happen, but when more layers of defense are added and the present layers of defense are properly trained and understand that they are able to catch the errors of others, the chances of a system failing egregiously are microscopic.

In a college basketball game, there are three layers of defense on the floor itself (the officials), between four and six sitting at the scorer's table, and players and coaches can even be included as they legitimately point out errors at times. Though the officials will have the final say in most situations as they are ultimately responsible. However, clearly, it is a systematic effort of many staff in order to administer a game correctly. For example, if the clock randomly stops in the middle of play for more than 15 seconds, officials on the floor may not catch it immediately because their focus is on the action on the floor. The official scorer could be

watching for fouls, the clock operator could be waiting for a whistle to stop the clock, the shot clock operator could be looking for a shot to hit the rim, and the replay technician could be watching for a shot to cue the video. Each person has a specific job, but much occurs throughout the game and staff members need to attend to various issues throughout the contest. For instance, only one staff member needs to point out that the clock has not been running, and then the mistake can be fixed. The officials simply go to the instant replay monitor, use a stopwatch to correct the clock, and resume play. Perhaps an official can be blamed for breathing into their Precision Time microphone or the clock operator hit the button to stop the clock instead of start the clock. Most importantly, though, is that the error was committed by the entire system and the system then admitted the error and used its available tools (instant replay) to remedy the error the best way it could. Although not ideal, all necessary procedures were followed and all ended well.

Instant replay provides a defense mechanism to help all game operations staff avoid egregious errors. It is possible that an individual may make a mistake that can have an impact, but they are a member of a greater system that has been developed to minimize officiating errors. At times, players and coaches, as well as fans support a personal approach to officiating. Many coaches and players believe some officials are not good enough at their job, and believe that these officials are harmful to the system and should be suspended for their errors. Most often, evaluators do not have to suspend individual officials. However, many coaches, players, and fans may be strong advocates of blaming and banning officials for mistakes.

The person approach is not an adequate way to evaluate human error. It is a good way to assign blame to individuals, but not helpful in preventing future errors. Two features of human error are important to look at. First, because errors occur in an organization or system, it is sometimes the best and most skilled people who commit the worst mistakes. Secondly, errors

tend to come in patterns that come from a faulty system. While more egregious, individual errors get the most publicity in college basketball officiating. The issues that deserve the most focus and attention are where there are systematic shortcomings of certain rules not being enforced the same in different leagues, or if instant replay is not utilized to correct errors where they can be corrected.

Though the current scholarly literature reviewed is not specific to college basketball, the ideas behind its rationale and principles are easily applied to the administration of a college basketball game. Though basketball is just a game and does not typically include stakes such as surgical errors or death as the article's concerns cover, there are still substantial errors that occur in college basketball games that are prevented in similar ways. A team of game administrators comes together to achieve a common goal, enforcing the rules correctly for a game so it can be decided fairly. If the rules were not enforced correctly or there is a situation where there is potential for an egregious error to be committed, the officials are now able to rely on instant replay in most cases to be the final layer of defense against errors. Replay cannot fix all errors and not everything can and even should be subjected to instant replay, but replay has improved what was previously already a well-established and reliable system for correcting and preventing human error in college basketball.

Dekker (2002) described human error that can be related to officiating in college basketball. Dekker viewed error in two ways, the "old view" and the "new view" (Dekker, 2002). The "old view," views human failure itself as a failure on an individual standpoint. This opinion is reactionary in that it focuses solely on defending the system *from* individuals that commit errors. The "new view" on human error is similar to the system approach to error that was explained in the *Western Journal of Medicine*. The "new view" on human error is described

as a “symptom of trouble deeper inside the system” (Dekker, 2002, p. 372). The basic concept of this view on human error is that systems, such as the administration of a college basketball game, are entities that do not have safety mechanisms built in naturally. Therefore, people must create the “safety” to avoid error. In a college basketball game, that safety exists in the form of the scorer’s table staff, and more recently the instant replay system and the procedures that go along with it. It is unreasonable to expect that a person in a high pressure situation can see whether a shot was released before the clock expired if it was within a couple tenths of a second. In college basketball, the replay system is there to correct whatever error is made by that person, as natural human abilities aren’t something that can be controlled in many cases. Before instant replay was instituted, this would simply be a guess or estimation as to whether the shot was released in time, when it is something that is not subjective in any way. The “new view” provides those who analyze error with the ability to assess a situation and correct possible errors in a nuanced manner. Not all mistakes are the same and egregious errors are not always things that can be blamed on individuals themselves, so errors that occur in officiating a college basketball game must be looked at in a dynamic manner. When evaluating errors, it is important for evaluators to explore all possibilities regarding what caused the error and how it can be fixed. Dekker (2002 p. 372) stated, “it is well established that accidents cannot be attributed to a single cause, or in most instances, even a single individual.” Individual suspensions and discipline may be necessary, but in many cases, there are other factors that have led to that individual making a mistake and, in turn, being blamed for it. The window for such errors occurring in a college basketball game has shrunk greatly with the evolution of technology in the game. As the stakes have been raised by salaries, budgets, and now gambling, each result is being scrutinized more and more. While the humans present in this situation are absolutely necessary to the operation of a basketball game,

they cannot be relied upon to catch all errors and mistakes, and the addition of instant replay into their system of defenses has given them a way to avoid accidents and catch issues before they blossom into something out of their control.

There have been consequences of heightened scrutiny of officials. The number of officials is declining nationwide in high school athletics, and it is a trend that will soon find its way into college basketball. Ohio University's Athletic Administration Master's Program compiled some statistics on the decline in number of officials, titled "The Nationwide Decline in Sports Officials." Currently, obtaining officiating jobs at the college level is very difficult. However, if the trend of high school officials leaving the profession continues, college basketball could eventually end up seeing the same problems. The reason for officials the declining interest in officiating may be the verbal and sometimes physical abuse and threatening words that officials have to deal with during competition. In fact, 85.7% of officials would consider leaving the industry if spectator and fan behavior continued to get worse (Ohio University, 2018). As the median age of officials grows and older officials retire, the need for recruitment of new, young officials has never been higher. The National Association of Sports Officials (NASO) has worked with many states to improve these numbers (Ohio University, 2018). They have backed heavier punishments for individuals that commit acts of violence against officials and they provide insurance coverage to individuals injured by spectators. On top of that, Tennessee's Secondary School Athletic Association Committee is looking into its recruiting practices, working with industry leaders to bring in newer officials (Ohio University, 2018). High school and college basketball are very similar, but the officials in the high school game have little defense against their errors as compared to collegiate officials. The scorer's table includes fewer people in the high school game, and instant replay is not standard, though some states are

incorporating replay into their state championships at this time. On top of having fewer defenses, high school sports tend to have much more involvement from the fans and spectators in the form of family and parents. With these factors comes a tighter microscope on every error the officials make in high school basketball, and they do not have instant replay to rely on. With that comes a heavy “person” and “old view” approach to their errors. They will receive all the blame from the spectators and coaches, and they are in an environment that is not as comfortable and official-friendly as the collegiate level. Thus, college basketball’s trend of moving toward a more systematic defense against human errors could end up being detrimental to officiating at lower levels. The standard is becoming perfection, and without the help of something like instant replay to achieve that at the lower levels, less people will be inclined to officiate games.

Discussion

The topic of instant replay as a tool for correcting human error in any sport has been a controversial one. From the fans at home watching games to the commentators calling the game on television, everyone has an opinion. Most people tend to agree that there needs to be some type of fail-safe in place for the officials during games. After all, these are error-prone human beings with a lot of stakes riding on the decisions they are making. The controversy extends to long before the recent replay controversies of the 2019 men’s basketball Final Four. Bill Lyon, a sports columnist of the *Philadelphia Inquirer*, wrote about instant replay as far back as 1977. When writing about replay in NFL games, he spoke with Tommy Bell, who was a veteran NFL official at the time. In Lyon’s (1977) column, titled “Refs aren’t the only doubters on instant-replay officiating,” Bell expressed a great appreciation for instant replay for use on the television broadcast of games because “it’s proven that 95% of the officials’ calls are correct, and I think that has given the fans a lot of confidence in how we work” (Lyon, 1977 para. 10)

However, when it comes to using replay to correct errors in the games themselves, Bell's statements matched what many of replay's current opponents say whenever replay ends up playing a big role in the result of a game. He did not believe replay would ever find its way into professional football for three reasons, the first of those reasons being "you'd need about 40 cameras to cover all the angles, and even that might not be enough" (Lyon, 1977, para. 11). In 1977, that is a very legitimate concern. However, with technology's natural development and advancement, many television productions are able to produce an adequate number of angles to assist officials in correcting calls at many different levels of competition. On the biggest stage of the NFL season in 2018, the Super Bowl, there were 106 total cameras used to produce the game for television, in addition to fourteen mobile production units and over 500 people on staff (NewsCastStudio, 2018). While college basketball's financial impact will most likely never warrant a production as elaborate as the Super Bowl, the 2019 Final Four, too, had adequate replay equipment. The 2019 men's basketball Final Four held at U.S. Bank Stadium in Minneapolis, Minnesota was broadcasted on CBS and Turner with over 50 cameras (35 used for coverage of the game itself), 400 staff, and two full production compounds (Costa, 2019). Another of Bell's reasons was "...and most importantly, you'd take the human element away, and that's what makes football a great game" (Lyon, 1977, para. 12). This quote is interesting because with all the money in sponsorships, player contracts, television contracts, and now in the decriminalized gambling industry among other things, human error is the last thing that people want to see in sports. Forty years ago, there may have been some level of appreciation and nostalgia that came from the idea of human error, but with technology developing every year and results gaining more stakes each year—for both players as far as contract incentives as well as teams with sponsorships and naming rights, etc.—human error is something that needs to be as

limited as possible moving forward. It is unlikely that it can ever be completely eradicated, but as we have seen in college basketball and other sports, there are things that can be fixed in a reasonable manner that do not take too much time or “ruin” games as many people believe. On top of that, Bell believed that instituting instant replay would result in coaches wanting to challenge many plays during the game, meaning “the game would take five hours, maybe more” (Lyon, 1977, para. 11). And when a play is being reviewed for possession on a catch on the sideline, for example, “what happens if the instant replay turns up a holding call someplace else?” (Lyon, 1977, para. 21). Again, forty years later, replay has been instituted in the NFL and in many other sports, but with specific guidelines that make it a reasonable way to correct egregious or game-deciding errors without lengthening games too much.

In 1990, Rick Bozich, a columnist from the *Lansing State Journal*, wrote a column on his distaste for instant replay making its way into college basketball, titled “Replacing refs with replays will ruin college basketball.” His concerns with replay making its way into college basketball are similar to those of Tommy Bell’s regarding the NFL. Bozich (1990) wrote about concern over the flow of the game being interrupted by going to the monitor. He wrote the following:

To use instant replay in basketball is to risk interrupting the game’s rhythmic flow.

Basketball is like dancing, something easily destroyed by too many pauses. To use instant replay regularly is to risk undermining the authority of officials whose job already is thankless 98% of the time. (para. 6)

These are calls back to what Bell said about NFL games taking entirely too long thanks to replay. Bozich’s column includes a quote from longtime college basketball analyst Dick Vitale that is nearly identical to what Bell said. Vitale said, “I don’t like instant replay at all. It takes too much

of the human element out of the game” (Bozich, 1990, para. 18). The standards have changed, and the NCAA understands that. In the spring 2019 issue of the NCAA’s “Champion Magazine,” Greg Johnson (2019) wrote an article titled “Upon Further Review” in which he took a closer look at instant replay in different NCAA sports. NCAA coordinator of men’s basketball officials J.D. Collins addressed the issue of human error and standards of error directly. Collins said the following:

Excellence used to be the standard you would strive for, but now people expect perfection. As long as we’re human, we’re not going to be perfect. That is a significant shift to go from excellence to perfect. In the NCAA tournament, our officials are correct 96% of the time. You can be right the whole game, but if you make a mistake in the last minute, you turn into a terrible official. (para. 20)

At this current time, technology in sport is such that it can greatly reduce human error’s impact on the outcome of a game, but complete perfection is not an attainable standard at this time. In discussing replay in college football in the same piece from Johnson (2019), Dean Blandino, the current director of instant replay for college football and former director of officiating in the NFL echoed that sentiment. Blandino said the following:

If you follow the correct steps, then you are going to get to the desirable outcome 99 percent of the time. There are going to be things that are out of our control, and there are going to be some crazy plays that come up. It is about going through the proper steps every single play. (para. 22)

The specific process between different sports is not what is in question in this case. It is the fact that a process can be followed to perfection, all possible angles can be seen, and the ruling can still be in question because there are simply so many things that can get in the way of that

perfection that people are chasing. Bozich, Bell, and Vitale all make reasonable complaints regarding replay. After all, perfection is essentially impossible, and attempting to achieve it can ultimately be detrimental, by resulting in too many stoppages and delays for a competition to be considered legitimate. The reality, however, is that the NCAA, NFL, or any other league cannot curtail instant replay as these individuals once wished. One egregious miss, specifically at the conclusion of a game, has the possibility of ruining an official's reputation forever and then lead to disputed game results among other things. Events like that would simply lead back to a discussion of how we must use the technology we have available to us to prevent such errors from happening, which then becomes a never-ending cycle of instituting and repealing tactics and procedures that assist officials.

Conclusion

There are numerous external factors responsible for increasing pressure placed on college basketball officials each passing year. The microscope and scrutiny placed on the officials and the NCAA to decide games fairly and correctly is a driving factor in creating a system of defenses against all errors, whether minor or egregious, in the administration of a college basketball game. Technology's involvement in all of sport grows more prominent each year in response to this scrutiny. When human error is looked at in a more academic and scientific way as opposed to placing blame and making reactionary decisions, the system of defenses against error can be made more effective and efficient. From the referees, to the scorer's table, and all the way down to the instant replay process, college basketball game administration is a multi-layer defense mechanism against egregious errors. The newest of these layers may be the most important, and that is instant replay. Replay's history is still young and ever-changing. With the growth of sport will come the growth of instant replay.

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